問題 1 ：Texturing

1. Explain **aliasing** artifact of texturing from the point of view of the sampling theorem. This explanation must have two parts. The first one is a description of the theoretical reason behind of the aliasing with equations and illustrations. The second one is an experimental description base on the actual artifacts occurring while the animation by the program, using snapshots of the animation.
2. Explain one texturing algorithm to avoid the artifact.

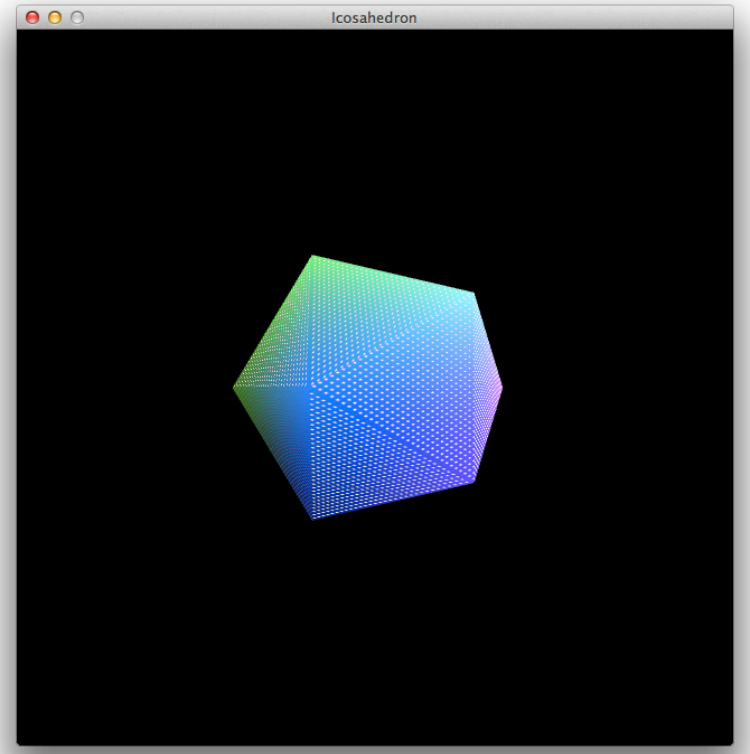
Sourcecode：**CG_Final_Code/MipMapping**

問題 2 ：Geometry Data Definition and Transform

Define a regular icosahedron whose center is the origin and whose one edge length is 0.8, translate the center to $(0,\ 0,\ -2)$, and make an animation that it rotates around the vertical axis which passes through the center.
Use the same framework of the program and replace the plane to the icosahedron.
Put one snapshot on your report and describe how to compile and execute your program.

Sourcecode：**CG_Final_Code/IcosahedronNormal**

Screenshot:



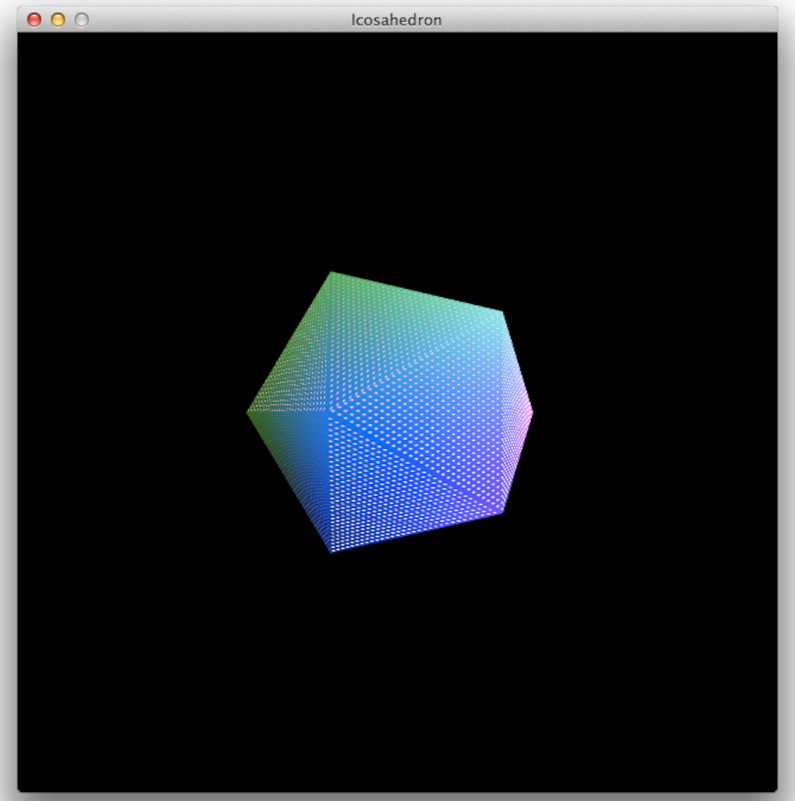
問題 3 ：Reflection

Calculate diffuse and ambient intensities on the surface of the regular icosahedron, as if it was a sphere, in the fragment shader stage. The equation to calculate the intensities R_{rgb} is defined as

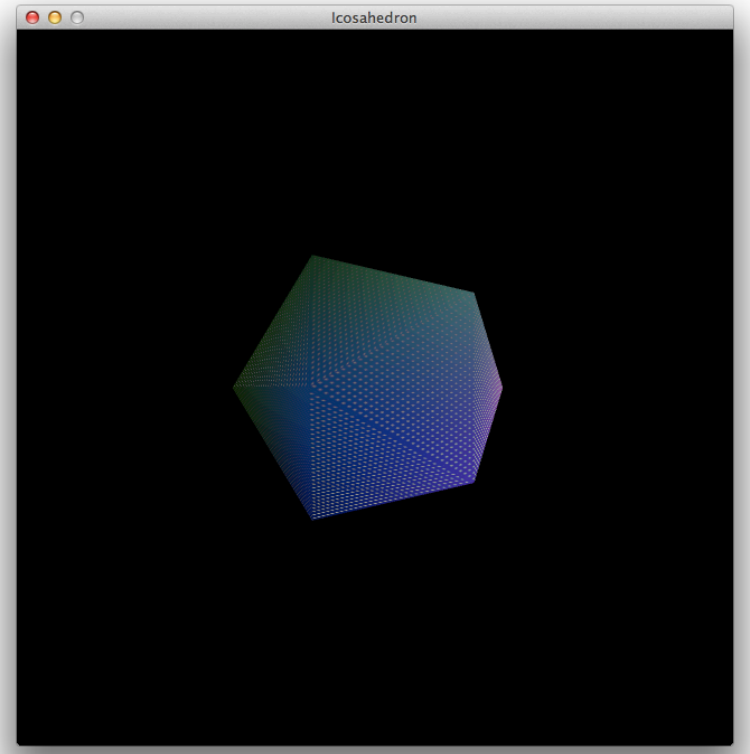
$$R_{\mathrm{rgb}} = C_{\mathrm{rgb}}\Big(\max(-\frac{LN}{|L||N|}) + a\Big)$$

where C_{rgb} is the color of the icosahedron, N is the normal vector at a point, L is the vector of an incident light direction and a is a coefficient of ambient light.
Set L as an efficient direction to express shading effect on the object surface.
Put one snapshot on your report and describe how to compile and execute your program.

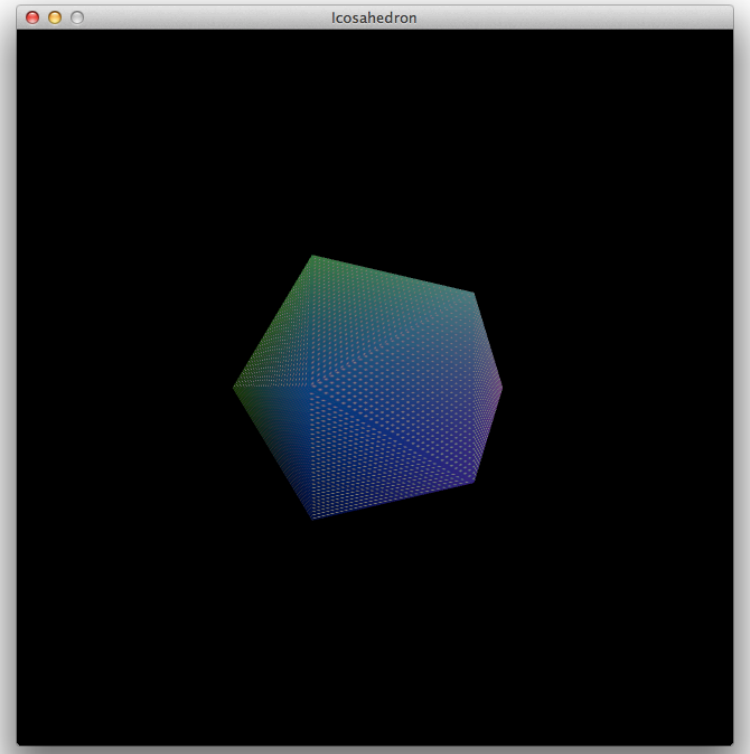
Sourcecode：**CG_Final_Code/IcosahedronWithReflection**
Screenshot:



スクリーンショットで示すのは，鏡面反射（光源 $L = (0.0, 10.0, -10.0)$）と拡散（環境光係数 $a = 0.5$）の組み合せです.



鏡面反射



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